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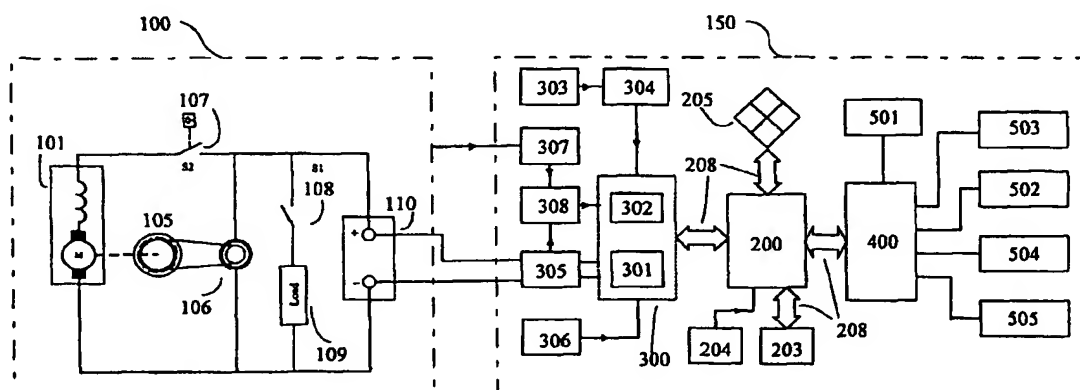
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(54) Title: **SYSTEM AND APAPRATUS FOR VEHICLE ELECTRICAL POWER ANALYSIS**



(57) Abstract: Apparatus for monitoring an electrical power supply system of a vehicle, the vehicle having a battery and internal combustion engine, an alternator, and a starter. The apparatus has a filter for determining the battery terminal voltage when the vehicle ignition is turned on. There is also a voltage gradient detector for detecting phase and gradient change of the battery terminal voltage when the vehicle ignition is on. A waveform detector is used for detecting and separating different waveforms when the vehicle ignition is on, and an engine-rotating sensor is used to sense a speed of the internal combustion engine when the vehicle ignition is on. Also included is a processor for processing at least one of the battery terminal voltage, the phase and gradient change, the different waveforms, and the speed of the internal combustion engine. An output is provided that is indicative of a condition of the electrical power supply system. A system for monitoring an electrical power supply system of a vehicle is also disclosed.